

The Art and Science of Agriculture: Building Preservice Teachers' Capacity to Engage in Interdisciplinary Education

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Introduction

The interdisciplinary approach has evolved as an important and challenging technique used by educators in the modern education curriculum (Jones, 2010). Interdisciplinary techniques synthesize multiple disciplines and generate teams of teachers and students to advance critical thinking, communication, creativity, and pedagogy (Jones, 2010). One successful approach to interdisciplinarity involves the combination of the rigors of science with the creativity of art (Colucci-Gray et al., 2017; Jeffries & Jeffries, 2022). Merging the disciplines of art and science have increased innovation among teachers and students, improved students' cognitive scores, and motivated students to further pursue the study of science (Colucci-Gray et al., 2017; Jeffries & Jeffries, 2022). Arts integration encourages greater understanding across disciplines and supports authentic experiences that engage students (National Art Education Association, 2021). Arts integration also provides multiple modes of learning, while fostering creativity and personal interpretation of topics and ideas (National Art Education Association, 2021). To increase arts integration and enhance interdisciplinary education, preservice teachers should be provided opportunities to explore the possibilities for integrating curriculum, encouraging student inquiry, and reflecting on pedagogical practices (Pool et al., 2011).

How It Works

All students enrolled in the Agricultural Education major at The Pennsylvania State University are required to participate in a pre-internship seminar prior to their semester-long student teaching experience. During the pre-internship seminar, the preservice agricultural education teachers engage in a variety of workshops, covering topics such as financial literacy and innovative teaching methods. At the most recent pre-internship seminar in January of 2023, a graduate student at The Pennsylvania State University led a workshop pertaining to arts integration. The arts integration workshop was designed to have the current preservice agricultural education teachers (1) identify ways to integrate art into their teaching and (2) explore the benefits of arts integration. The workshop utilized a presentation and various hands-on activities to introduce important content and engage the workshop participants.

The first part of the workshop prompted participants to consider and identify similarities between the disciplines of science, specifically the agricultural sciences, and art. The workshop participants discussed how science and art promote inquiry, exploration, discovery, analysis, and invention. In the second portion of the workshop, the participants were provided images of eight different items, such as cyanotype paper and a microscope, and were tasked with using those items to design an arts-based activity that could be implemented into an agricultural education lesson. The graduate student leading the workshop shared examples with participants, demonstrating how they could utilize different materials to integrate art-related projects and activities into their teaching. The most critical part of the workshop provided participants the opportunity to develop arts-based project ideas that they could implement during their student teaching experience or in their future career as an agricultural educator. The participants were provided a unit topic, such as sustainable landscaping or woodworking, and were asked to

develop a lesson that integrates art. All of the participants worked with a partner and were required to include lesson objectives, align their lesson with the Agriculture, Food and Natural Resources (AFNR) Career Cluster Content Standards and the Common Core State Standards, and incorporate either a fundraising or community component. Each group had the opportunity to share their lesson with the other participants. The arts integration workshop concluded with a discussion centered around the benefits of arts integration, the importance of interdisciplinary education, and the resources that are available to help educators integrate art into their teaching.

Results to Date

A total of twelve preservice agricultural education teachers from The Pennsylvania State University participated in the arts integration workshop during their pre-internship seminar. The positive verbal feedback communicated by the participants and the positive evaluation survey results indicated that the workshop was both educational and engaging. According to the evaluation survey results, all twelve participants indicated that they found the workshop useful for their professional objectives. Additionally, all twelve participants indicated that they are likely to implement the techniques learnt during the workshop in their student teaching experiences. Similarly, eleven of the twelve participants indicated that they are likely to implement the techniques learnt during the workshop in their future careers. The workshop participants stated that they learned how arts integration can enhance creativity, increase interdisciplinary education, promote partnerships and collaboration, and help educators reach broader audiences. All the participants stated that a similar workshop or activity should be organized for future cohorts of preservice agricultural education teachers. Overall, the arts integration workshop offered participants the opportunity to explore the benefits of integrating art into their agricultural education curriculum and provided them the space to develop lesson plans and project ideas that promote interdisciplinary education.

Future Plans

The positive feedback provided by the participants and their suggestion to organize and deliver a similar workshop for future cohorts of preservice agricultural education teachers has initiated the planning of future arts-related workshops and activities. By providing similar workshops during future pre-internship seminars, future agricultural education teachers can hopefully understand the benefits of arts integration, incorporate art into their curriculum, and demonstrate effective strategies for interdisciplinary teaching and learning. Future qualitative research could be conducted to determine if the workshop participants incorporated any arts-integration activities or lessons into their student teaching experiences or careers.

Costs/Resources Needed

The graduate student who led the arts integration workshop invested a considerable amount of time and energy into the design, preparation, and delivery of the workshop. The only required resources necessary for the workshop included a Microsoft PowerPoint presentation, paper, and pencils. However, each participant was also provided a sheet of cyanotype paper at the conclusion of the workshop for experimentation purposes. The cost of all workshop supplies totaled approximately \$30.

References

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